Claims

1.   Process for controlling the speed of intermediate production machines arranged to continuously perform sequential operations on drawn metal parts, comprising the steps of:

(a) providing a plurality of drawing press tools independently producing segregated streams of drawn metal parts,

(b) merging said segregated streams into a single ordered stream of drawn metal parts,

(c) providing a first intermediate production machine receiving said ordered stream and performing a first operation on said drawn metal parts,

(d) measuring the rate of production of drawn metal parts in each of said segregated streams,

(e) selecting the highest rate of production of a said segregated stream, and

(f) controlling the rate of production in the first intermediate production machine as a function of said selected highest rate of production.

2.   The process according to Claim 1, wherein the rate of production in a segregated stream is determined by counting strokes of a drawing press tool in a selected period of time.

3.   The process according to Claim 1, including:

providing a programmed logic computer,

multiplying said selected highest rate of production in a said segregated stream by the number of drawing press tools in said computer to obtain an optimum rate of production for said ordered stream, and

controlling the speed of said ordered stream through said first intermediate production machine with said computer at said optimum rate of production.

4.   The process according to Claim 1, including:

providing a buffer supplied with drawn metal parts by said first intermediate production machine, said buffer being arranged to maintain a pre-selected normal level of drawn metal parts, and

discharging drawn metal parts from said buffer at a variable discharge speed responsive to the level of drawn metal parts above or below said pre-selected normal level.

5. The process according to Claim 4, including:

providing a second intermediate production machine receiving drawn metal parts in said ordered stream from said buffer and performing a second operation on said drawn metal parts, and

controlling the second intermediate production machine in response to the variable discharge speed of said buffer.

6. The process according to Claim 1, including:

providing a plurality of sensors to determine any backup of drawn metal parts in each of said segregated streams, and

terminating operation of a drawing press tool when a sensor indicates backup of parts in any one of said segregated streams, while continuing to operate the remainder of said plurality of drawing press tools.

7. Process for controlling the speed of intermediate production machines arranged to continuously perform sequential operations on drawn metal parts, comprising the steps of:

(a) providing a plurality of drawing press tools independently producing segregated streams of drawn metal parts,

(b) determining the rate of production in each segregated stream by counting strokes of each drawing press tool in a selected period of time,

(c) merging said segregated streams into a single ordered stream of drawn metal parts,

(d) providing a first intermediate production machine receiving said ordered stream and performing a first operation on said drawn metal parts,

(e) selecting a highest rate of production of a segregated stream,

(f) multiplying said selected highest rate of production by the number of drawing press tools to obtain an optimum rate of production for said ordered stream, and

(g) controlling the flow of said ordered stream through the first intermediate production machine at said optimum rate of production.

8. The process according to Claim 7, including:

providing a buffer supplied with drawn metal parts by said first intermediate production machine, said buffer arranged to maintain a pre-selected normal level of drawn metal parts, and

discharging drawn metal parts from said buffer at a variable discharge speed responsive to the level of drawn metal parts above or below said pre-selected normal level.

9. The process according to Claim 8, including:

providing a second intermediate production machine receiving drawn metal parts in said ordered stream from said buffer and performing a second operation on said drawn metal parts, and

controlling the second intermediate production machine in response to the variable discharge speed of said buffer.

10. The process according to Claim 7, including:

providing a plurality of sensors to determine any backup of drawn metal parts in each of said segregated streams, and

terminating operation of a drawing press tool when a sensor indicates a backup of parts in any one of said segregated streams, while continuing to operate the remainder of said plurality of drawing press tools.

11. Process for controlling the speed of intermediate production machines arranged to continuously perform sequential operations on drawn metal parts, comprising the steps of:

(a) providing a plurality of drawing press tools producing drawn metal parts,

(b) providing a first intermediate production machine receiving said drawn metal parts and performing a first operation on said drawn metal parts,

(c) establishing a rate of production in the first intermediate production machine

(d) providing a buffer supplied with drawn metal parts by said first intermediate production machine, said buffer being arranged to maintain a pre-selected normal level of drawn metal parts,

(e) discharging drawn metal parts from said buffer at a variable discharge speed responsive to the level of drawn metal parts above or below said pre-selected normal level,

(f) providing a second intermediate production machine receiving drawn metal parts from said buffer and performing a second operation on said drawn metal parts, and

(g) controlling the second intermediate production machine in response to said variable discharge speed of said buffer.